THE RELATIVE EFFICIENCY OF TWO METHODS OF INSTRUCTION IN AMERICAN HISTORY AND ALGEBRA

by

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C O N T E N T S

CHAPTER I

Introduction.

The widespread use of intelligence and achievement tests has emphasized the extent of individual differences among children. These differences due in some degree to inheritance and magnified by experience are exceedingly complex and, consequently, the attempts at adjustment have been varied and numerous. Adjustment has been accomplished in several ways; coaching the slow pupils at Batavia and Mount Vernon, New York or by allowing extra time for them at Gary, Indiana, ability grouping at Detroit and Los Angeles, and differentiated assignments in the Universities of Chicago and Wisconsin High Schools.

On the other hand a few bolder attempts that break up the class organization and more completely individualize instruction have been made. The

pioneer in this movement was Preston Search, who as superintendent of the Pueblo schools from 1888 to 1894, without any special technique determined that each child should progress at his own rate. A few years later a well organized effort to individualize instruction originated at the San Francisco State Teacher's College under the direction of Frederic L. Burke. The technique developed there was introduced into the Winnetka Illinois elementary public school system and became known as the Winnetka plan. About the same time the laboratory plan was introduced by Helen Parkhurst into the high school at Dalton Massachusetts and has become known as the Dalton laboratory plan. These plans have been so widely observed, discussed and advertised that the value of the whole scheme of group or mass instruction is being questioned.

CHAPTER II

Object of Study.

Robert Josselyn Leonard, Director of the School of Education Teachers College Columbia University, in an address delivered at the Educational Conference of the one hundredth Anniversary of Western Reserve University at Cleveland, Ohio said, "What is needed is a series of experiments conducted over a period of years in which widely differing modes of instruction are used with measures of the results in terms of actual knowledge of facts obtained, degree of mastery of technique of procedures, and the result upon appetites and desires."

B. R. Buckingham, Director of the Bureau of Research Ohio State University in a critism of the statistical results of experiments with individualization as presented in Section III, Part II of the Twenty-fourth Yearbook of the National society for the Study of Education said, "I should like to see an experiment tried in which

the amount of individualization of instruction would be varied for different groups of children from practically zero as in the lecture method to as large a proportion of the total school service as obtained at Winnetka."

Recently a few controlled experiments have been made in the elementary schools of Winnetka[1] and one in the University of Iowa.[2] The general conclusion resulting from the Winnetka experiments was that there was no significant difference in resulting achievement of the two groups but that the individual method results in a decided saving of time for faster children. The general conclusion resulting from the experiment at the University of Iowa was that the two methods, lecture-conference and individual instruction, are of equal effectiveness in teaching elementary psychology.

(1) "Survey of Winnetka Schools" by Washburne, Vogel and Gray. Chapter VIII.

(2) "A comparison of two methods of college instruction by Norma V. Scheidemann. School and Society. Vol. XXV No. 649. pp. 673-676.

The apparent need of experimentation which will make possible a comparison of some of the methods of group instruction in high schools with individualized plans as those at Dalton or Winnetka suggested in this study.

The specific object of this study is to determine the relative efficiency of individual and class instruction as shown by controlled experiments in Algebra and American History in the ninth and twelfth grades respectively of the Dickinson Community High School at Chapman, Kansas.

CHAPTER III

Method of Procedure.

In both the control and experimental groups in Algebra and American History the following conditions held:

Each method was used to give instruction for a course of extending over thirty-two weeks.

The same general equipment was available for both groups.

The students were unaware of the fact that the results would be compared and every effort was made to have the stimuli the same for all groups.

The groups were equated on the basis of age, sex and Terman group scores.

Standardized objective tests were given for initial and final tests, the Pressey-Richards test for the American History groups and the Illinois Standardized tests for the Algebra groups.

The Pressey-Richard tests are a series of four tests: the first to determine character judgment, the second the historical vocabulary, the third sequence of events and the fourth cause and effect relationships.

The Illinois Standardized tests also comprise a series of four tests which include all the fundamental operations of Algebra with special emphasis on the equation.

There were twenty three pupils in each of the American History and Algebra groups.

Each group had the services of a teacher for forty-five minutes, the control groups for recitation and group instruction, and the experimental group for tests and individual instruction. Each group also had forty-five minutes for study, either in study hall or library.

Every effort was made to control all factors except the method of teaching. The technique used in the control group followed the usual method of requiring recitations from the pupils supplemented by instruction from the teachers. The technique used in the experimental group followed the Winnetka plan which is as follows:

Each subject was divided into definite units of achievement or goals, thirty-six in American History and thirty-two in Algebra. (See appendix for general of divisions and goals also samples of goals. Pages 52-56, 62-64.)

Practice tests that were self instructive and self corrective were given to each pupil after preparation was made on each goal. There were various forms of objective tests such as completion true-false, multiple choice etc. Essay tests were sometimes given. (Samples of these tests may be found in Appendix. Pages 57-61, 65-66.)

The Winnetka goal record books were used to keep an account of the progress of each pupil. As soon as a goal was completed the date of its completion was entered in the goal record book. If the pupil failed to answer all the points in the tests correctly he was required to make further study on those parts.

The teacher assisted the pupils as individuals or groups. Pupils voluntarily grouped themselves at times for tests and instruction and there was somewhat of a rivalry between certain pupils to reach the various goals. This was especially true in the American History class.

One important consideration in this experiment was to secure as nearly equal groups as possible. The groups were selected on the basis of sex, chronological

age and the Terman group scores. Table I, page 15, gives the data upon which the selection was made. The only difference in the groups as to number of boys and girls was in the American History groups, the control group having one more boy than the experimental group and the experimental group having one more girl than the control group. The Algebra groups had the same number of boys and girls in each group.

The means of chronological ages of the groups showing a difference of only 1.3 and the American History groups a difference of 3.5 both in favor of the experimental groups. By reference to the table of chronological ages on page 15, it will be seen that the difference in the means of the American History groups was due almost wholly to two pupils, Ros and Eme, who were considerably older than any other pupil in either group. The standard deviation was also higher for the experimental groups. On the basis of Terman groups scores the means of the control groups were higher than for the experimental groups, the greater difference being between the American History groups which show a difference of 2.6.

The means of the grades in the related subjects, History and Arithmetic, are also given in the table.

These grades were obtained from the records of the county superintendent and represent the standing of the pupils at the time of the completion of the eighth grade. They were not used in equation the groups, but it is interesting, to observe that the control group in American History showed a superiority of over seven percent according to the teacher's marks in the related subject in the eighth grade. Not nearly so large a difference was shown in the initial test in which the control group made only 2.6 percent higher score than the experimental group. On the basis of these figures it is perhaps safe to assume that the control groups were slightly superior to the experimental groups in both subjects, the greater difference being between the American History groups.

There was one pupil in American History who was not included in either group. Her Terman groups score was twenty-four points higher than any other pupil and her score in Pressey-Richards test was 81 on the initial test. She was with the control group the first semester and with the control group the first semester and with the experimental group the last semester. Her score on the final test was 91, a gain of 10 points.

CHAPTER IV

Data and their presentation.

The most important problem in this experiment lay in measuring the achievement of each group. Initial and final tests were given to each group in each subject under the same conditions and at the same time. Standardized tests were employed, the Pressey-Richards test in American History, and the Illinois Standardized tests in Algebra. The table on page 16 summarizes the results of these tests presenting the means and standard deviations of the scores and gains. A comparison of the means of the gains show a superiority for the control group in each subject, an advantage of two points in American History and five and one tenth points in Algebra. Scholarship tests prepared by the Kansas State Teacher's College at Emporia were given also at the close of the experiments. In these tests the control group in American History showed a superiority of 1.3 points over the experimental group

and the control group in Algebra a superiority of 8.3 points over the experimental group.

However, before making final conclusions in regard to the results of this experiment certain limitations that must necessarily attend any new procedure or method should be observed. In the first place there were no outlines or textbooks available or suitable for individual instruction in the subjects. Because of the lack of such material for the individual instruction group it was necessary to prepare outlines setting up goals in accord with the Winnetka plan. These goals were based upon the state tests in order to secure an uniformity in text books.

The work of preparing the outlines, practice and final tests was necessarily hurried and lacked the refinement necessary for securing the most precise results.

Another limitation in connection with the introduction of a new method lies in the unfamiliarity of both teacher and pupils with the new procedure. Much time is lost im making adjustments and, consequently, there is loss in achievement.

Certain administrative difficulties were encountered in selecting the groups and hold them together during the time of the experiment. There were no irregularities in attendance in the American History group that would have affected greatly the results, but the work in the Algebra groups was considerably disturbed by absences or withdrawals. The number in the equated groups in Algebra was changed from twenty-five to twenty-three during the year.

Finally the inadequacy of the tests in measuring achievement should be taken into account. It is quite possible that both control and experimental groups achieved results that were not measured, such as habits of work, attitudes toward the subject and even many facts not covered by the tests.

CHAPTER V

Conclusions.

Summarizing the results of this experiment and considering the limitations there seemsto be evidence pointing to these general conclusions:

(1) That there is no significant difference in the achievement of the two groups in American History.

(2) That the difference in the achievement of the two groups in beginning Algebra seems to favor the class group.

(3) That the differences in achievement in either case are perhaps due to administrative difficulties and the teacher, rather than to the method.

(4) That there should be further experimentation covering a longer period of time and including all the high school subjects before final conclusions are made concerning the merits of the Winnetka plan for individualized instruction.

TABLE I

Number of boys and girls in each group, and the means and Standard Deviations of the chronological ages, the Terman group test scores, and grades in the related subjects.

	American History Control Group	American History Experimental Group	Algebra Control Group	Algebra Experimental Group
Number boys in each group	12	11	12	12
Number girls in each group	11	11	11	11
Mean Chronological ages in months	214	217.5	178.3	179
Standard Deviation Chronological ages in months	8.41	19.6	10 .3	14.1
Mean Score Terman group test	132.5	129.6	98.52	97
Standard Deviation Score Terman group test	32.5	29.6	227	29.6
Mean in trait subject in eighth grade	84.3	76.6	85.6	84.4
Standard Deviation in trait subject in eighth grade	6.3	9.4	7.3	9.3

TABLE II

Means and standard deviations of the initial tests, final tests, gains, and scholarship tests.

	American History Control Group	American History Experimental Group	Algebra Control Group	Algebra Experimental Group
Mean Initial test	51.6	49	.173	.565
Standard Deviation Initial test	12	13		
Mean Final test	66	61	18.5	13.8
Standard Deviation Final test	16	14.7	9.24	9.65
Mean of Gains	14.6	12.6	18.3	13.2
Standard Deviation of Gains	6.23	8.4	9.23	8.5
Mean Scholarship test	37.3	36	27.7	19.4
Standard Deviation Scholarship test	7.3	7.8	3.6	6.2

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A M E R I C A N H I S T O R Y

Chronological Ages in Months

CONTROL GROUP		EXPERIMENTAL GROUP	
How	196	Iva	216
Hat	224	Ceo	215
Pau	222	Mad	209
Elv	205	Ros	274
Mar	198	Ral	203
Tho	213	Bil	203
Ele	208	Gen	208
Win	210	Mar	191
Cec	211	Law	209
Leo	217	Kin	189
Abn	215	Ste	213
Car	223	Vio	213
Ber	221	Flo	212
Nel	200	Edw	216
Ire	232	Mar	201
Ken	215	Gra	228
Kin	211	Ver	229
Mar	212	Mam	223
Cha	223	Emi	264
Add	225	Alb	239
Flo	217	Rut	205
Edn	215	Edn	226
Wil	210	Fer	217
Averages	214		217.8

A L G E B R A

Chronological Ages in Months

CONTROL GROUP		EXPERIMENTAL GROUP	
Els	166	Max	174
How	192	Hen	161
Geo	185	Eve	170
Elm	195	Ter	179
Est	183	Ail	166
Ber	162	Ban	204
Hen	174	Dar	179
Jos	173	Ber	156
Wil	177	Bir	198
Vid	175	Har	173
Cla	177	Cla	177
Hat	166	Roy	183
Alm	185	Mis	173
Rat	169	War	169
Orl	170	Lot	186
Mey	203	Wil	199
Cat	169	Jes	167
Van	188	Ver	172
Cha	185	Cha	158
Ken	180	Den	191
Ray	188	Ray	188
Fra	175	Alm	210
Ver	164	Alv	186
Averages	178.3		179

AMERICAN HISTORY CONTROL GROUP

	Score Terman Group Test
How	182
Hat	175
Pau	174
Elv	171
Mar	167
Tho	163
Ele	158
Win	157
Cec	151
Leo	143
Abn	143
Car	134
Ber	129
Nel	121
Ire	113
Ken	107
Nin	106
Mar	105
Cha	95
Add	94
Flo	92
Edn	92
Wil	75
TOTAL SCORE	3047

AMERICAN HISTORY EXPERIMENTAL GROUP

	Score Terman Group Test
Iva	189
Cec	175
Mad	172
Ros	168
Ral	164
Bil	162
Gen	138
Mar	138
Law	135
Min	132
Ste	131
Vio	129
Flo	126
Edw	125
Mar	119
Gra	109
Ver	107
Mau	101
Emi	95
Alb	94
Rut	94
Edn	90
Fer	89
TOTAL SCORE	2982

ALGEBRA CONTROL GROUP

	Score Terman Group Test
Els	142
How	130
Geo	130
Elm	128
Est	125
Ber	121
Hen	116
Jos	114
Wil	113
Vid	109
Cla	107
Hat	100
Alm	94
Rut	89
Orl	84
Mey	82
Cat	80
Van	79
Cha	72
Ken	70
Ray	63
Fra	62
Ver	56
TOTAL SCORE	2266

ALGEBRA EXPERIMENTAL GROUP

	Score Terman Group Test
Max	149
Hen	147
Eve	132
Ter	128
Arl	123
Ban	118
Dar	117
Ber	108
Bir	107
Har	104
Cla	102
Roy	97
Mis	95
War	91
Lot	90
Wil	84
Jos	84
Ver	72
Cha	72
Den	63
Ray	59
Alm	56
Alv	33
TOTAL SCORE	2231

AMERICAN HISTORY GROUPS

Grades in trait subject, American History, on completion of eight grade

Control Group		Experimental Group	
How	84	Iva	86
Hat	86	Cec	82
Pau		Mad	80
Elv	82	Ros	86
Mar	88	Ral	86
Tho	88	Bil	86
Ele	92	Gen	86
Win	68	Mar	84
Cec	90	Law	60
Leo	82	Kin	70
Abn	90	Ste	76
Georg	82	Vic	80
Ber	80	Flo	70
Nel		Edw	76
Ire		Mar	84
Ken	84	Gra	80
Kin	80	Ver	96
Mar	68	Man	61
Cha	80	Emi	
Add	80	Alb	76
Flo	76	Rut	
Edn		Edn	60
Wil	82	Fer	66
Averages	82.2		77.8

ALGEBRA GROUPS

Grades in trait subject, Arithmetic,

on completion of eighth grade

CONTROL GROUP		EXPERIMENTAL GROUP	
Els	92	Max	95
How	95	Hen	93
Geo	89	Eve	94
Elm	86	Ter	88
Est	98	Arl	90
Ber	89	Ban	80
Hen	94	Dar	95
Jos	93	Ber	78
Wil	94	Bir	92
Vid	88	Har	98
Cla	96	Cla	91
Hat	90	Roy	93
Alm	94	Mis	76
Rut	90	War	90
Orl	86	Lot	88
Mey	95	Wil	74
Cat	90	Jes	86
Van	61	Ver	78
Cha	91	Cha	89
Ken	74	Den	81
Ray	91	Ray	93
Fra	82	Alm	56
Ver	82	Alv	91
Averages	88.7		86.5

AMERICAN HISTORY CONTROL GROUP

Scores Pressey-Richards
American History tests.

	Sept. 10, 1926	May 3, 1927	Gain
How	70	83	13
Hat	62	80	18
Pau	64	73	9
Elv	55	77	22
Mar	56	81	25
Tho	66	76	10
Ele	72	84	12
Win	54	66	12
Cec	52	76	24
Leo	54	76	22
Abn	48	55	7
Car	56	73	17
Ber	44	64	20
Nel	41	55	14
Ire	38	64	26
Ken	70	78	8
Nin	44	57	13
Mar	49	63	14
Cha	43	56	13
Add	46	49	3
Flo	33	44	11
Edn	23	43	20
Wil	47	50	3
Total	1187	1523	336

AMERICAN HISTORY EXPERIMENTAL GROUP

Scores Pressey-Richards
American History tests.

	Sept. 10, 1926	May 3, 1927	Gain
Iva	67	81	14
Cec	68	79	11
Mad	68	76	8
Ros	60	63	3
Ral	72	74	2
Bil	67	76	9
Gen	53	73	20
Mar	49	71	22
Law	44	62	18
Min	58	69	11
Ste	43	41	2
Vio	47	70	23
Flo	27	48	21
Edw	51		
Mar			
Cra			
Ver	37	72	
Mau	31	54	23
Emi	40	55	15
Alb	38	41	3
Rut	39	47	8
Edn	37	43	6
Fer	38	48	10
Total	1128	1417	289

AMERICAN HISTORY CONTROL GROUP

Scores Scholarship tests.

	Jan. 11, 1927	April 8, 1927
How	47	46
Hat	52	49
Pau	44	36
Elv	49	47
Mar	42	36
Tho	47	44
Ele	49	49
Win	40	33
Cec	45	45
Leo	41	45
Abn	41	35
Car	45	41
Ber	40	27
Nel	41	30
Ire	34	33
Ken	49	45
Nin	41	25
Mar	41	31
Cha	39	36
Add	44	38
Flo	42	24
Edn	31	34
Wil	40	28
Total	984	857

AMERICAN HISTORY EXPERIMENTAL GROUP

Scores Scholarship tests.

	Jan. 11, 1927	April 8, 1927
Iva	52	41
Cec	49	49
Mad	47	44
Ros	36	29
Ral	40	43
Bil	43	43
Gen	43	42
Mar	35	25
Law	45	35
Bin	49	37
Ste	35	25
Vic	42	36
Flo	37	33
Edw	39	32
Mar	42	47
Gra	43	40
Ver	44	45
Mau	32	24
Emi	40	34
Alb	37	34
Rut	38	21
Edn	30	21
Fer	52	29
Total	957	824

ALGEBRA CONTROL GROUP

Scores Illinois Standardized Algebra tests.

Sept. 10, 1926	April 26,1927	Gain
Els	20	20
How	17	17
Geo	14	14
Elm	21	21
Est	29	29
Ber	29	29
Hen	23	23
Jos	16	16
Wil	27	27
Vid	34	34
Cla	21	21
Hat	35	35
Alm	13	13
Rut	18	18
Orl	33	33
Mey	1	1
Cat	11	11
Van 4	16	12
Cha	5	5
Ken	11	11
Ray	17	17
Fra	5	5
Ver	10	10
Totals 4	426	422

ALGEBRA EXPERIMENTAL GROUP

Scores Illinois Standardized Algebra tests.

	Sept. 10, 1926	April 26, 1927	Gain
Max		13	13
Hen		8	8
Eve		6	6
Ter		9	9
Arl		10	10
Ban	12	39	27
Dar		5	5
Ber		10	10
Bir		9	9
Har	1	23	22
Cla		1	1
Roy		15	15
Mis		23	23
War		12	12
Lot		9	9
Wil		30	30
Jes		23	23
Ver		5	5
Cha		28	28
Den		4	4
Ray		14	14
Alm		17	17
Alv		4	4
Totals	13	317	304

ALGEBRA CONTROL GROUP

Score Scholarship test

April 8, 1927

Els	38
How	
Geo	29
Elm	39
Est	31
Ber	43
Hen	37
Jos	35
Wil	28
Vid	45
Cla	
Hat	37
Alm	17
Rut	
Orl	31
Mey	16
Cat	17
Van	
Cha	3
Ken	18
Ray	25
Fra	17
Ver	21
Total Score	527

ALGEBRA EXPERIMENTAL GROUP

Score Scholarship test.

April 8, 1927

Max	20
Hen	15
Eve	24
Ter	18
Arl	17
Ban	39
Dar	22
Ber	18
Bir	17
Har	24
Cla	21
Roy	15
Mis	28
War	20
Lot	9
Wil	26
Jes	19
Ver	14
Cha	20
Den	15
Ray	13
Alm	22
Alv	11
Total	447

OUTLINE OF AMERICAN HISTORY

Division I 1492-1763

A--Exploration and Colonization

B--Struggle for a Continent

Division II 1763-1789

A--The Revolution

B--Forming a more perfect union, or the Critical Period

Division III 1789-1825

A--Development of National Unity

B--Struggle for Commercial Freedom

Division IV 1825-1849

A--Jacksonian Era

B--Great Westward Expansion

Division V 1849-1865

A--The Slavery Question--Shall Slavery be Extended

B--Secession and the Civil War

Division VI 1865-1885

A--Reconstruction

B--Prosperity and Progress

Division VII 1885-1900

A--Rise of Corporate Power and the Labor Unions

B--Expansion, or taking a hand in Old World Affairs

Division VIII 1900-1914

A--War on the Trusts

B--The Progressive Movement

Division IX 1914-1926

A--The World War

B--Return to Normalcy

DIVISION I 1492-1763

A--Exploration and Colonization

B--Struggle for a continent

Goal 1--Discovery of America and early settlements 1492-1565

Goal 2--Rise of England in the sexteenth century 1565-1607

Goal 3--Planting the colonies 1607-1689

Goal 4--Struggle for a continent, or Intercolonial Wars 1689-1763

DIVISION II 1763-1789

A--The Revolution

B--Forming a more perfect Union, or the Critical Period

Goal 1--Quarrel with England, or the causes of the Revolution 1763-1775

Goal 2--First years of the war and the Declaration of Independence 1775-1778

Goal 3--The French Alliance and the closing years of the war 1778-1783

Goal 4--The Critical Period and the framing of a Constitution 1783-1789

DIVISION III 1789-1825

A--Development of National Unity

B--Struggle for Commercial Freedom

Goal 1--Washington and Adam's Administration 1789-1801 Development of National Unity

Goal 2--Jefferson's Administration 1801-1809 Jeffersonian Democracy

Goal 3--Madison's Administration 1809-1817 Commercial Freedom

Goal 4--Monroe's Administration 1817-1825 Era of Good Feeling

DIVISION IV 1825-1849

A--Jacksonian Era

B--Great Westward Expansion

Goal 1--John Quincy Adams' Administration 1825-1829
End of Virginia Dynasty and Caucus Rule

Goal 2--Jackson's and Van Buren's Administration
1829-1841. Jacksonian Democracy

Goal 3--Harrison and Tyler's Administration
1841-1845. Annexation of Texas

Goal 4--Polk's Administration 1845-1849
Four great measures

DIVISION V 1849-1865

A--The Slavery Question--Shall Slavery be Extended?

B--Secession and the Civil War

Goal 1--Taylor and Filmore's Administration
1849-1853. Compromise of 1850

Goal 2--Pierce's Administration 1853-1857
Kansas-Nebraska Act and Rise of the
Republican Party

Goal 3--Buchanan's Administration 1857-1861
Dred Scott Decision and Secession of
Southern States.

Goal 4--Lincoln's Administration 1861-1865
Civil War

DIVISION VI 1865-1885

A--Reconstruction

B--Prosperity and Progress

Goal 1--Johnson's Administration 1865-1869
Reconstruction

Goal 2--Grant's Administration 1869-1877
Aftermath of Civil War

Goal 3--Hayes' Administration 1877-1881
Removal of Troops from South

Goal 4--Garfield and Arthur's Administration
1881-1885. Civil Service Reform

DIVISION VII 1885-1900

A--Rise of Corporate Power and Labor Unions

B--Expansion or taking a hand in Old World Affairs

Goal 1--Cleveland's First Administration 1885-1889. Industrial revolution. Growth of corporations and labor unions

Goal 2--Harrison's Administration 1889-1893 The Tariff and the Trusts

Goal 3--Cleveland's Second Administration 1893-1897. Social and Political Unrest

Goal 4--McKinley's Administration 1897-1901 Spanish American War

DIVISION VIII 1901-1914

A--War on the Trusts

B--The Progressive Movement

Goal 1--Roosevelt's first Administration 1901-1905. War on the Trusts

Goal 2--Roosevelt's second Administration 1905-1909. Conservation and Panama Canal

Goal 3--Taft's Administration 1909-1913 Progressive Movement

Goal 4--Wilson's first Administration 1913-1917 The New Freedom

DIVISION IX 1917-1927

A--The World War

B--Return to Normalcy

Goal 1--Wilson's second Administration 1917-1918 The World War

Goal 2--Wilson's second Administration continued 1918-1921. Controversy over League of Nations.

Goal 3--Harding's Administration 1921-1923 Disarmament Conference

Goal 4--Coolidge's Administration 1923 to present time. Return to Normalcy.

DIVISON 1-GOAL 1

Discovery of America and early settlements
1492-1565

This goal includes the period from the discovery of America in 1492 to the founding of St. Augustine by the Spaniards in 1565, during which time the Spanish, French, and Portuguese were rivals for the possession of the new world. The dispute between Spain and Portugal was settled by Pope Alexander VI who fixed the Line of Demarcation. In the clash between Spain and France in Florida, Spain was the victor.

Read the account of this period in Chapters I and II of Forman's Advanced American History. In the syllabus in American History by Robinson, lists are given for major and minor biographies of leaders. Do the work required on pages 4 and 6 for the leaders who were active in this period.

Place and time are important in the study of history. Work out carefully the assignments for map work for this period. The following dates are specially important:

1492 First voyage of Columbus
1513 Balboa discovers the Pacific ocean
1565 Mendendez Founded St. Augustine

Other dates may be learned incidentally but these should be firmly fixed in your mind for reference. Two were commemorated by Worlds Fairs.

A number of references are given at the close of each chapter, some of which are original sources. Look up all of them and outline two in which you are most interested. Every one should read the account of the voyage of Columbus in Vol. I of Fiske's Discovery of America, beginning on page 410.

There are many correlations in music, art, and literature that are interesting to the history student. In connection with this topic we have in are, "Statue of Columbus" and "Triumph of Truth over Error"; in music, "The mighty fortress". There are also available the following views listed in the "The World visualized for the class room" by Keystone View Company:

422, 423, 325, 486, 175, 332, 162.

After you have studies this period thoroughly you will be given a number of practice tests by which you can check yourself. When you think you have mastered this goal, you will be given the final test.

PRACTICE TEST

Division I Goal I Form I

1. The three leading nations in Europe at the close of the 15th century were _____, _____, and _____.
2. Spain was consolidated by the marraige of _____ and _____, uniting _____ and _____.
3. The prevailing type of government in the 15th century was the _____ and the religion was _____.
4. Two inventions, the _____ and _____, aided navigation.
5. The trade with the Orient by land was interfered with by the _____.
6. The _____ took the lead in finding a new route.
7. Columbus secured aid from _____.
8. Columbus made _____ voyages.
9. America was named for _____ _____.
10. Balboa discovered the _____ _____ in _____.
11. In 1513 _____ discovered Florida.
12. De Soto discovered the _____ in 1541.
13. At the end of the fifteenth century, the population of Europe was about _____ if what it is now.
14. Society was divided into three classes, _____, _____, and _____.
15. The chief occupation was _____.
16. The merchants of Europe carried on trade with the _____.
17. In the fifteenth century there was a revival of learning called the _____.
18. _____ with movable type was invented by _____ in 1455.
19. In 1519 Cortez conquered _____ and ten years later _____ overrun Peru.
20. Henry VII sent _____ on a voyage in 1497.
21. The line of demarcation was fixed by _____.
22. All land _____ of line of demarcation was to belong to Portugal, all _____ to Spain.
23. The gold hunters were from _____, the fishermen from _____.
24. There were two noted explorers from France, _____ and _____.
25. The French attempted to colonize under _____ and _____.
26. _____ drove out the French and founded _____ in 1565.

PRACTICE TEST

Division I Goal I Form II

Mark the statement with a plus if true, with a minus if false.

1. In the fifteenth century the leading nations were Italy, Russia and Austria.
2. The prevailing type of government in 1492 was the monarchy.
3. The dominant church at the time of the discovery of America was the Protestant.
4. The population of Europe in the fifteenth century was one third of what it is now.
5. The commercial metropolis of the world was Paris.
6. The art of navigation was improved by the invention of the compass.
7. Columbus made three voyages to America.
8. The continent was named for Columbus.
9. Cabot first touched the mainland of North America.
10. The French drove the Spanish out of Florida.
11. Columbus did not know that he had discovered a new continent.
12. The French first came to America to fish.

PRACTICE TEST

Division I Goal I Form III

1. Arrange these events in the order that they occurred.

(a) Cabot's voyage.
St. Augustine founded.
Vespucius reached coast of Honduras.

(b) Voyage of Verrazano.
Balboa discovered Pacific Ocean.
Line of demarcation drawn.

(c)
Cartier explored St. Lawrence river.
Cortez conquered Mexico.
De Soto discovered Mississippi river.

2. Which of the following was a result of the other two?

(a) Voyage of Columbus.
Blocking trade routes.
Mariner's compass.

(b) Desire for wealth.
Balboa discovered pacific.
Boldness of Spanish adventurers.

(c) Fishing.
Enmity of Francis I for Spain.
Voyage o f Verrazano.

3. References:

(a) Which of the references in Chapter I and II are original sources?

(b) Who wrote about Spain in America?

(c) Who wrote about the crusades and renaissance?

(d) What references have you read and outlined? Reproduce main points in outline.

(e) Who wrote a good detailed account of the first voyage of Columbus?

FINAL TEST.

Division I Goal I Form I

1. This goal includes the period from _____ to _____.
2. The _____, _____, and _____ were the first rivals for the possession of the new continent.
3. _____ fixed the line of demarcation.
4. The Pope decreed that all _____ of the line of demarcation should belong to _____, all _____ to _____.
5. In 1565 _____ drove _____ from Florida and _____ founded _____.
6. _____ discovered the Pacific ocean in _____.
7. The leading nations at the close of the 15th century were _____, _____, and _____.
8. The new continent was named for _____.
9. The mainland of North America was discovered by the _____ in _____.
10. Columbus made _____ voyages to the new world.
11. The two earliest French explorers were _____ and _____.
12. Arrange the following events in order; Line of Demarcation, Cortez conquered Mexico, Balboa discovered Pacific, St. Augustine founded and De Soto discovers Mississippi.
13. The chief desire of the Spanish was _____ and of the French _____.
14. _____ first circumnavigated the globe.
15. The two outstanding leaders of this period were _____ and _____.
16. Most of the early explorers were seeking a shorter route to _____.
17. _____ discovered Florida in 1513.
18. The first explorers, Columbus, Cabot and Vespucius were _____.
19. In the fifteenth century the commercial metropolis was _____.
20. Five Spanish explorers were, _____, _____, _____, _____, _____, and two French were _____ and _____.

FINAL TEST

Division I Goal I Form II

1. America was named after a Florentine merchant by the name of _____.
2. The man who headed the first expedition to circumnavigate the globe was _____.
3. The first European to see the Pacific Ocean was a Spaniard by the name of _____.
(Give the reason you think most nearly right.)
4. Columbus made his first voyage across the Atlantic because
_____ he believed the earth was round and he could find a shorter route to India.
_____ he believed he could discover a new continent.
_____ he wanted to secure the Indian trade for his native city, Genoa.
5. England, France and Spain were more active in western explorations and colonization than Italy, Germany and Russia, because
_____ they were friendly with one another and helped each other in exploration and colonization.
_____ they were stronger nations and their governments were better organized.
_____ Italy, Germany and Russia were too far away from America.
6. Europe at the time Columbus discovered America was
_____ Catholic in religion and ruled by kings who had little respect and sympathy for the common people.
_____ Protestant and ruled by the great middle class that stood for equality and equal opportunity for all.
7. We should study the European background of American history because
_____ we are of European descent and should honor the original home of our forefathers.
_____ our customs, government, institutions, laws and religion are European in origin, and we should study this background to better understand our own institutions.
_____ Europe sent out explorers and discoverers and founded a home for us.
8. The Spaniards were interested in Mexico and the Northern part of South America primarily because
_____ they wanted to plant colonies there to cultivate the soil and make permanent homes for themselves.
_____ they wanted the gold, silver and precious stones said to be amassed in the cities there.
_____ they wanted to convert the natives to the Roman Catholic religion.

OUTLINE OF ALGEBRA I.

DIVISION I.

Constructing and using algebraic expressions.

- Goal 1. Use of letters to represent numbers in solving problems.
- Goal 2. Use of the simple equation.
- Goal 3. Use of positive and negative numbers.
- Goal 4. Elementary operations with signed numbers.

DIVISION II.

Fundamental operations with algebraic expressions.

- Goal 1. Addition.
- Goal 2. Subtraction.
- Goal 3. Removing parenthesis.
- Goal 4. Further use of simple equations.

DIVISION III.

Multiplication and factoring.

- Goal 1. Monomials and Polynomials.
- Goal 2. Product of two Binomials.
- Goal 3. Division of Monomials and Polynomials.
- Goal 4. Highest Common Factor and Least Common Multiple.

DIVISION IV.

Fractions.

- Goal 1. Reduction of fractions.
- Goal 2. Addition and Subtraction.
- Goal 3. Multiplication.
- Goal 4. Division.

OUTLINE OF ALGEBRA 1, continued.

DIVISION V.

Fractional Equations.

- Goal 1. Solution of general type.
- Goal 2. Applied problems.
- Goal 3. Literal equations.
- Goal 4. Formulas.

DIVISION VI.

Proportion and Graphic representation.

- Goal 1. Ratio and Proportion.
- Goal 2. Applied problems.
- Goal 3. Use of graphs.
- Goal 4. Solution of equations by graphs.

DIVISION VII.

Simultaneous equations.

- Goal 1. Solution by substitution.
- Goal 2. Solution by addition and subtraction.
- Goal 3. Equations containing fractions.
- Goal 4. Applied problems.

DIVISION VIII.

Radicals and quadratics.

- Goal 1. Extracting square root.
- Goal 2. Radicals.
- Goal 3. Pure quadratics.
- Goal 4. Affected quadratics.

DIVISION I GOAL I

Use of letters to represent numbers.

Algebra is not a difficult subject but you must read carefully the explanations in your textbook, and if you fail to understand one sentence you will be quite likely to have difficulty from that point on through the course. If after repeated efforts you cannot understand at a certain point, ask the teacher to explain the meaning to you.

It saves time to use abbreviations and letters instead of words to represent numbers. You have already found it convenient to let a letter stand for a number in arithmetic. It is necessary that we learn more about this new way of representing numbers by letters because we shall use it in all of our later work in mathematics. You will find a discussion of this topic in the text (Ford and Ammerman) on pages 1 to 6. Read page 1 very carefully and then answer the questions on pages 2 to 8. Now turn to the appendix, pages 289 and 290 and work the first twenty-eight problems.

You may now take up, the work on page 17, section 13. Real all the explanations and work all the oral and written exercises over to the bottom of page 19. If you have done your work carefully you are now ready for your practice test. Ask your teacher for it. If there are any mistakes in your work, go back and review the points which you do not understand. Ask for another practice test. If your answers are satisfactory, you are ready for the final test.

PRACTICE TESTS IN ALGEBRA

The following exercises were used for practice tests in Algebra:

EXERCISES FOR IMPROVING ACCURACY IN ALGEBRA

BY

RALEIGH SCHORLING
Head of Department of Mathematics
The University High School
and Associate Professor of Education
University of Michigan

AND

JOHN R. CLARK
The Lincoln School of
Teachers College
Columbia University

Yonkers-on-Hudson, New York

WORLD BOOK COMPANY

2126 Prairie Avenue, Chicago

1926

FINAL TEST

Division I Goal I Form A

Write in symbols:

1. The sum of three times a and five times b.
2. Three times a subtracted from five times b.
3. The sum of a and b divided by their difference.
8. The product of a and 2b divided by their difference.
13. The product of x-y and the square root of 7x.
15. The square of the sum of a and b.

Simplify:

8. 23-2-6-4+2+16.

If a 6, b 4, c 3, d 2, e 1, find the value of each of the following expressions:

8. $2b^2cd^2e$.
9. $6cd^2e$.
10. $7abcd^2e$.
18. $a+ab-b$.
19. $a+2ab+b$.
20. $a-b$.
28. $b+4b-4$.
29. $2a^2b^2cd^2e$.
30. $a+a-c+3de$.